

APPLICATION  
FOR  
UNITED STATES LETTERS PATENT

TITLE: GPS LOCATION FINDING DEVICE

APPLICANT: ALBERT RODRIGUEZ

CERTIFICATE OF MAILING BY EXPRESS MAIL

Express Mail Label No. EV 399313393 US

March 12, 2004  
Date of Deposit

## **GPS LOCATION FINDING DEVICE**

### **BACKGROUND**

[0001] Car owners often forget where they parked their cars, especially in large parking lots at malls, amusement parks and stadiums or in an area with limited visibility (e.g., a heavily wooded forest).

### **SUMMARY**

[0002] A GPS (Global Positioning System) location finding device locks in location coordinates of a stationary car or person and then uses GPS signals and the last locked-in coordinates to direct the user back to the locked-in coordinates (e.g., car location, camp site, meeting site, etc.). The device may use special encrypted, firm-coded language to handle each function and operation, which may include mathematical functions. The device may also be used by children, hikers, joggers and campers who get lost. The device will point them in a direction back to a specific starting location, such as a campsite or car.

[0003] The device may provide a number of advantages. For example, the device may be small, compact, lightweight and adapted to fit on a keychain. The device may be relatively inexpensive to make and own. One configuration of the device does not require a user to purchase any other equipment. For example, one configuration of the device communicates with a GPS satellite and does need not to communicate with any component on the car or a like device. Thus, the device may be a stand-alone unit.

[0004] One general aspect relates to a portable device comprising a keypad, which is pressable by a user, a microcontroller coupled to the keypad, a Global Positioning System (GPS) sensor coupled to the microcontroller, and a display coupled to the microcontroller. The microcontroller is operable to direct the GPS sensor to request and receive first location coordinates of a first location of the user when the user presses the keypad. The microcontroller is operable to store the first location coordinates. The microcontroller is operable to direct the GPS sensor to request and receive second location coordinates at a second location (e.g., the user's present location) when the user presses the keypad. The microcontroller is operable to compare the first and second location coordinates and cause the display to indicate information directing the user from the second location to the first location.

[0005] Another general aspect relates to a method that includes receiving at a portable device a first input from a user; responsive to the first input, sending a signal to a Global Positioning System (GPS) to retrieve first location coordinates of the portable device from the GPS; storing the first location coordinates in the portable device; receiving at the portable device a second input from a user; responsive to the second input, sending a signal to the GPS to retrieve second location coordinates of the portable device from the GPS; comparing the second location coordinates to the first location coordinates; and displaying a direction arrow to indicate a direction from the second location coordinates to the first location coordinates.

[0006] The details of one or more aspects are set forth in the accompanying drawings and the description below. Other features and advantages will be apparent from the description and drawings, and from the claims.

### **BRIEF DESCRIPTION OF DRAWINGS**

[0007] Fig. 1 illustrates components of a location finder device.

[0008] Fig. 2 illustrates a method of operating the location finder device of Fig. 1.

[0009] Fig. 3 illustrates an example of the location finder device of Fig. 1.

[0010] Like reference symbols in the various drawings indicate like elements.

### **DETAILED DESCRIPTION**

[0011] Fig. 1 illustrates components of a location finder device 100. The device 100 may have a key-ring handle to fasten to a standard key chain. The device 100 may be implemented in a small housing with dimensions such as 1 ½" width x 2" length x ½" height. Other configurations of the device 100 may have other dimensions. The device 100 may include light emitting diodes (LEDs) 101, a keypad 114, a keypad interface 102, a microcontroller 104, a memory 103, a digital compass 106, a liquid crystal display (LCD) 108, a Global Positioning System (GPS) sensor 110 and a power supply 112, such as a battery. The GPS sensor 110 may include a GPS microchip.

[0012] The keypad 114 may have one or more buttons, such as a power button 115 to control a switch to activate and de-activate the device 100, a first small button 116A to control a switch to lock in a first location, and a second small button 116B to control a switch to determine a second location or as a scroll, letting a user go into a menu or a second location finder.

[0013] The LCD display may receive 8-bit data from the microcontroller 104. The LCD display 108 may be 1" x 1". A door compartment for the battery 112 may be 1 ½" x 1".

[0014] A primary application for the location finder device 100 is to locate a stationary vehicle in parking lots, camp sites or other areas where there may be other vehicles parked in the same area or even no other vehicle in landscape having limited visibility (e.g., a heavily wooded forest). The term "car" or "vehicle" may refer to any type of vehicle that moves and then becomes stationary, including trucks, motorcycles, bicycles, scooters, water craft, etc.

[0015] Fig. 2 illustrates a method of operating the device 100. When a user parks a vehicle and plans to leave the vehicle (or wishes to return to a location, such as a campsite), the user presses the power button 115 to activate the device 100 and presses the first small button 116A to lock-in a location of the device 100 in or near the vehicle (block 200). The device 100 sends a signal to a GPS satellite 120. The GPS satellite 120 sends a set of location coordinates to the device 100, which stores the location coordinates in the memory 103 in block 202. The user may then leave the vehicle and take the device 100 to a shopping area, a hiking trail, a stadium, etc.

[0016] When the user desires to return to the vehicle (or first location, e.g., campsite), the user presses the second button 116B on the device 100 in block 204. The device 100 requests location coordinates from the GPS satellite 120 and compares the present coordinates of the location of the user to the previously locked-in coordinates representing the location at which the vehicle was parked (block 206). In block 208, the LCD display 108 helps the user return to the last locked-in location by providing a visual display of the last locked-in coordinates (e.g., of the vehicle), a direction arrow to the locked-in coordinates of the vehicle and/or a distance to the last locked-in location. For example, the LCD 108 may display a distance that progressively decrements, e.g., 50 feet, 40 feet, 20 feet, as the user approaches the last locked-in location. The LCD 108 or the LED's 101 may indicate Location Found, Location Activated, and Low Battery.

[0017] In another embodiment, the user may press the same button to (a) lock-in coordinates of the vehicle and (b) requests location coordinates from the GPS satellite 120 and compares the present coordinates of the location of the user to the previously locked-in coordinates representing the location at which the vehicle was parked.

[0018] The device may too may include three switches activated by the keypad 114. The keypad 114 may be coupled to a first switch to activate the device 100 from a power OFF state or sleep state to an ON state. The button 116A may be coupled to a second switch to activate

and lock in an initial location. The button 116B may be coupled to a third switch to lock in a second, or present, location or control a scroll button that allows the user to scroll into a menu for other possible options displayed on the LCD 108.

[0019] The microcontroller 104 may communicate with the other components via the RS232 standard or some other standard. The device 100 may use special encrypted, firm-coded language to handle each function and operation.

[0020] The digital compass 106 may have two functions. First, the digital compass 106 may lock the North Pole as a main reference point. Second, the digital compass 106 may use the North Pole as a main reference point to calculate different locations based on the main reference point and provide the exact distance and location of the last locked-in position. The digital compass 106 will also help the LCD 108 display the direction and distance of the last locked-in position of the vehicle or the last position locked-in.

[0021] The device 100 may include an audio generator 118 to generate an audio response, such as beeps or rings, which may change in tone or frequency to inform the user of the direction and/or distance to the locked-in coordinates, e.g., of the vehicle.

[0022] Fig. 3 illustrates an example of the location finder device 100 of Fig. 1 with a key chain holder 300. The LCD 108 may be a 1" blue glow LCD display showing North, East, South, West directions 308 and text 308 of a distance to the locked-in coordinates. There may be three LED indicators 302-306, such as an LED 302 to indicate System activated, an LED 304 (may blink) to indicate the device is within 3 to 7 feet of the last locked-in location, and an LED 306 to indicate a low battery status.

[0023] A number of aspects have been described. Nevertheless, it will be understood that various modifications may be made. For example, instead of cars, the device 100 may be used to track other stationary sites, such as a bicycle, a camp site, a meeting place, etc. As another example, the device 100 may be implemented in a mobile phone, a personal digital assistant (PDA), a laptop computer or some other type of portable device. The device may be implemented through any combination of software and hardware. Accordingly, other aspects are within the scope of the following claims.